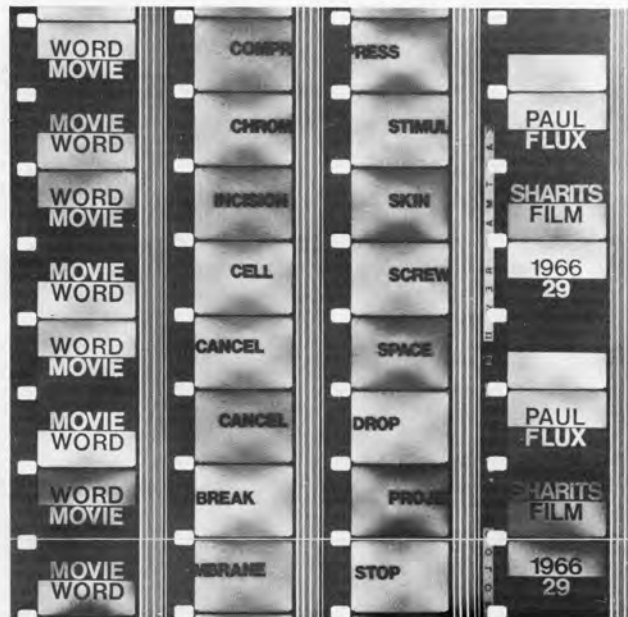


John Minkowsky: Několik poznámek k videu Vasulkových
v letech 1973–1974

John Minkowsky: Some Notes on Vasulka Video, 1973–1974

The MOVING image/ statewide

Film and videotapes selected and distributed by Media Study/Bufalo.



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Program 1 - Film

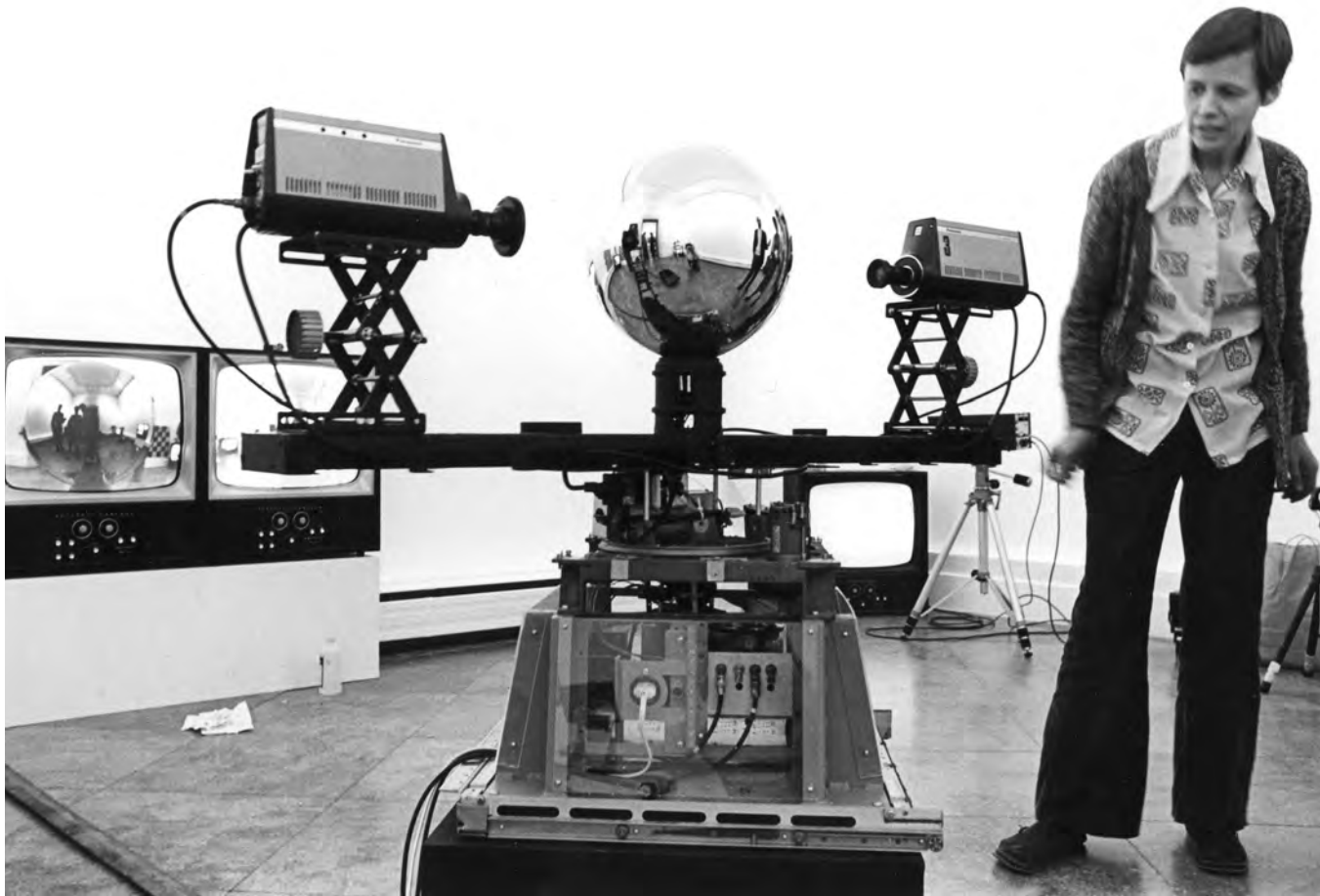
FISHER/SHARITS/BRAKHAGE/GEHR/CONNER

Program 2 - Video

CAMPUS/WEGMAN/JONAS/DEVITO
MANN/VIOLA/THE VASULKAS

- 1 Thom Andersen and John Minkowsky (tvŕrci programu): *The Moving Image/Statewide: Films and Videotapes Selected and Distributed by Media Study/Bufalo* (Albany, New York: University-wide Committee on the Arts, State University of New York, 1978). Obal

Thom Andersen and John Minkowsky (programmers): *The Moving Image/Statewide: Films and Videotapes Selected and Distributed by Media Study/Bufalo* (Albany, New York: University-wide Committee on the Arts, State University of New York, 1978). Cover



2 Steina Vasulka na své výstavě „Machine Vision“ v galerii Albright-Knox Art Gallery (Buffalo, New York, 1978)
Foto Kevin Noble

Steina Vasulka at her exhibition „Machine Vision“ at the Albright-Knox Art Gallery (Buffalo, New York, 1978)
Photo by Kevin Noble



3 Woody Vasulka, přednášející na konferenci „Design/Electronic Arts Conference“ (Buffalo, New York, 1977)
Foto Jane Hartney

Woody Vasulka, speaking at the „Design/Electronic Arts Conference“ (Buffalo, New York, 1977)
Photo by Jane Hartney

Beau Fleuve



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par le New York State Council on the Arts et le
National Endowment for The Arts.

- 4 Bruce Jenkins a John Minkowsky (tvůrci programu): *Beau Fleuve: A Program of Media Study/Buffalo* (Paris: Sponzorováno Americkým centrem 1979). Obal

Bruce Jenkins and John Minkowsky (programmers): *Beau Fleuve: A Program of Media Study/Buffalo* (Paris: Sponsored by The American Center 1979). Cover

In *The Matter*, the simpler of the tapes, generated sine, triangle and square waves are used to reshape the display raster, and the image of the dot pattern alters accordingly into analogous waveshapes. The waves which shape the image also produce the sound.

Reminiscence shows a very different use of the Rutt-Etra. A portapak tape of a farmyard in Moravia, a place of reminiscence from Woody's youth, was displayed on the scan processor. The raster lines, according to their intensity, were vertically deflected in varying degrees. The result of this process has been described as a "topographical map of the brightness of an image."



Digital Image of Steina

MACHINE VISION AND DIGITAL IMAGES

Steina, meanwhile, returned to black and white video, concerned with space and time in a series of tapes and installations she called *Machine Vision*.

"Ordinarily the camera view is associated with a human viewpoint, paying attention to the human conditions around. In this series the camera conforms to a mechanized decision-making of instruments, with the movements, and attention directed towards their machine to machine observations. By mounting a camera on a motor driven device (a car, a turntable) I could make timeless cyclical programs of zooms and turns. Then I would point another camera to observe that camera, and so on.

The machines I used in the *Machine Vision* came out of Woody's background; he was the machine maker and he constructed them mostly for his work in film. I play them my own way as I used to play my music. I also engage my violin for image control."

-Steina

Steina's *Violin Power* segments (from *Switch! Monitor! Drift!* (1976)) show once again the use of sound to control elements of the image. Here the sound of the violin controls a switcher, alternating between different camera aspects of the artist at specified field multiples.

The *Machine Vision* excerpt (from *Switch! Monitor! Drift!* (1976)) shows a complex interrelationship of machines in motion, rotating cameras, switching of frames and keying between frames in horizontal drift, as well as the movement of the artist before the observing cameras. These interactive motions

create a perceptually challenging view of "a space" achieved by machines operating in a mode determined by a sympathetic sensibility.

In 1975, Woody began to build "The Vasulka Imaging System," a digital computer-controlled personal facility which continues to evolve. The digital system, developed by the Vasulkas, with digital design by Jerf Schier, utilizes a high-speed digital computer specifically intended for the manipulation and processing of television images. The image is stored in computer memory as a group of numbers, each number representing a picture element (or pixel); the artist is therefore able to change the image with precision - via mathematical opera-

tions - moving pixels to different locations in the total image, or changing the color, brightness, or other aspects of the pixels.

Much of Woody's time between 1975 and the present has been invested in design and theoretical work on digital imaging. "A Syntax of Binary Images" was published in *Afterimage* (Rochester, N.Y.) in Summer, 1978. The Vasulka Imaging System has been a tool for both Woody and Steina, individually and collaboratively.

The series of short pieces, provisionally titled *Digital Images*, shows the early fruits of imaging experiments on a system still under development. The complex beauty that these fragments display, and the possibilities they suggest, point the way to future explorations of the electronic image by the Vasulkas.

Woody Vasulka was born in Brno, Czechoslovakia and studied metal technologies and hydraulic mechanics at the School of Industrial Engineering there. He then entered the Academy of Performing Arts, Faculty of Film and Television in Prague and began to direct and produce short films. He emigrated to the United States and worked as a film editor for Francis Thompson and for Harvey Lloyd Productions.

In 1967, he began experiments with electronic sound and stroboscopic lights with Alphons Schilling and in 1971, co-founded The Kitchen. He was Technical Advisor to the Alternate Media Center in New York and was associated with Electronic Arts Intermix. In 1974, he became a member of the Faculty of the Center for Media Study, State University of New York at Buffalo and began his investigations into

Le Matériau, Reminiscence, et bien d'autres cassettes en une année qui s'est révélée extrêmement productive. 1974 a marqué la fin de la collaboration de Woody et Steina pour un certain temps. Woody se consacrant de plus en plus à la théorie de l'image électronique basée sur son travail avec le Processeur à Balayage Rutt-Etra. Le Rutt-Etra est un instrument spécial, conçu pour réorganiser la trame de télévision ou les 525 lignes dont est composé l'écran. Par un processus de modulation par déflexion, l'utilisateur peut introduire des signaux qui modifient la structure de balayage du faisceau à électrons sur la face de l'image vue de manière inhabituelle mais prévisible.

"Comparé à mon travail précédent sur cassette-video, le travail avec le processeur à balayage indique une tendance totalement différente dans ma compréhension de l'image électronique. La rigidité et l'emprisonnement total des séquences temporelles ont imprimé au produit un style didactique. Des modes improvisationnels sont devenus moins importants qu'un scénario mental précis et qu'une forte notion de la structure en cadre de l'image électronique. L'accent s'est trouvé déplacé sur la reconnaissance d'un objet temps-énergie, et sur son élément constructeur programmable - la forme de l'onde."

- Traduit de Woody Vasulka

Dans *La Matière* la plus simple des cassettes, sinus, générés, ondes triangulaires et carrées, sont utilisées pour remodeler le cadre de projection, et l'image des structures pointillées est modifiée en conséquence en des formes d'ondes analogues. Les ondes qui forment l'image produisent également le son.

Reminiscence montre une utilisation très différente du Rutt-Etra. Une cassette portable filmant une basse-cour en Moravie, lieu de reminiscence de la jeunesse de Woody, fut montée sur le processeur à balayage. Les lignes de la trame, selon leur intensité, furent déclinées verticalement à des degrés variables. Le résultat de ce procédé a été décrit "comme une carte topographique de la luminosité de l'image."

Vision Mécanique et Images Digitales: Pendant ce temps, Steina est retournée à la vidéo en noir et blanc, intéressée par l'espace et le temps dans une série de cassettes et d'installations qu'elle a appelées *Vision Mécanique*.

"En temps ordinaire, la vue cinématographique est associée à un point de vue humain, prêtant attention aux conditions humaines qui l'entourent. Dans cette série, la caméra se conforme à la prise de décision mécanisée des instruments, les mouvements et l'attention étant concentrés sur leurs observations de machine à machine.

En montant une caméra sur un dispositif à moteur (une voiture, une platine), je pourrais construire des programmes cycliques intemporels de zooms et de révolutions. Ensuite je pointerais une autre caméra vers cette caméra, et ainsi de suite. Les machines que j'ai utilisées dans *Vision Mécanique* proviennent de la formation de Woody: c'est lui qui

produisait les machines, et il les construisait essentiellement pour son travail cinématographique. Je les ai utilisées à ma manière, tout comme je jouais ma propre musique. J'introduis également mon violon pour le contrôle de l'image."

- Traduit de Steina

Des fragments de *Le Pouvoir du Violon* de Steina (extraits de *Changement! Monitor! Derive!* - 1976) montrent une fois de plus l'utilisation du son pour contrôler des éléments de l'image. Ici le son du violon contrôle un interrupteur alternant entre divers aspects de la caméra, de l'artiste, selon de multiples champs spécifiques.

L'extrait *Vision Mécanique* (titre de *Changement! Monitor! Derive!* - 1976) expose un jeu de relations complexes entre des machines en mouvement, des caméras tournantes, le changement de cadres et la synchronisation entre des structures en dérive horizontale, de même que le mouvement de l'artiste fixé par les caméras. Ces mouvements interactifs créent la vue, difficilement perceptible, d'un espace obtenu par des machines opérant en un mode déterminé par une sensibilité compréhensive.

En 1975, Woody a commencé à construire "Le Système de Production d'Images Vasulka", à contrôle digital par ordinateur qui continue à évoluer.

Le système digital développé par les Vasulkas, avec dessin digital de Jerf Schier, utilise un ordinateur digital à haute vitesse tout spécialement destiné à la manipulation et production d'images télévisées. L'image est enregistrée par la mémoire de l'ordinateur sous forme de groupe de numéros, chaque numéro représentant un élément de l'image (ou Pixel); l'artiste peut par conséquent changer l'image avec précision - par des opérations mathématiques - en déplaçant les pixels sur d'autres endroits de l'image totale, ou en changeant la couleur, la luminosité ou d'autres aspects des pixels.

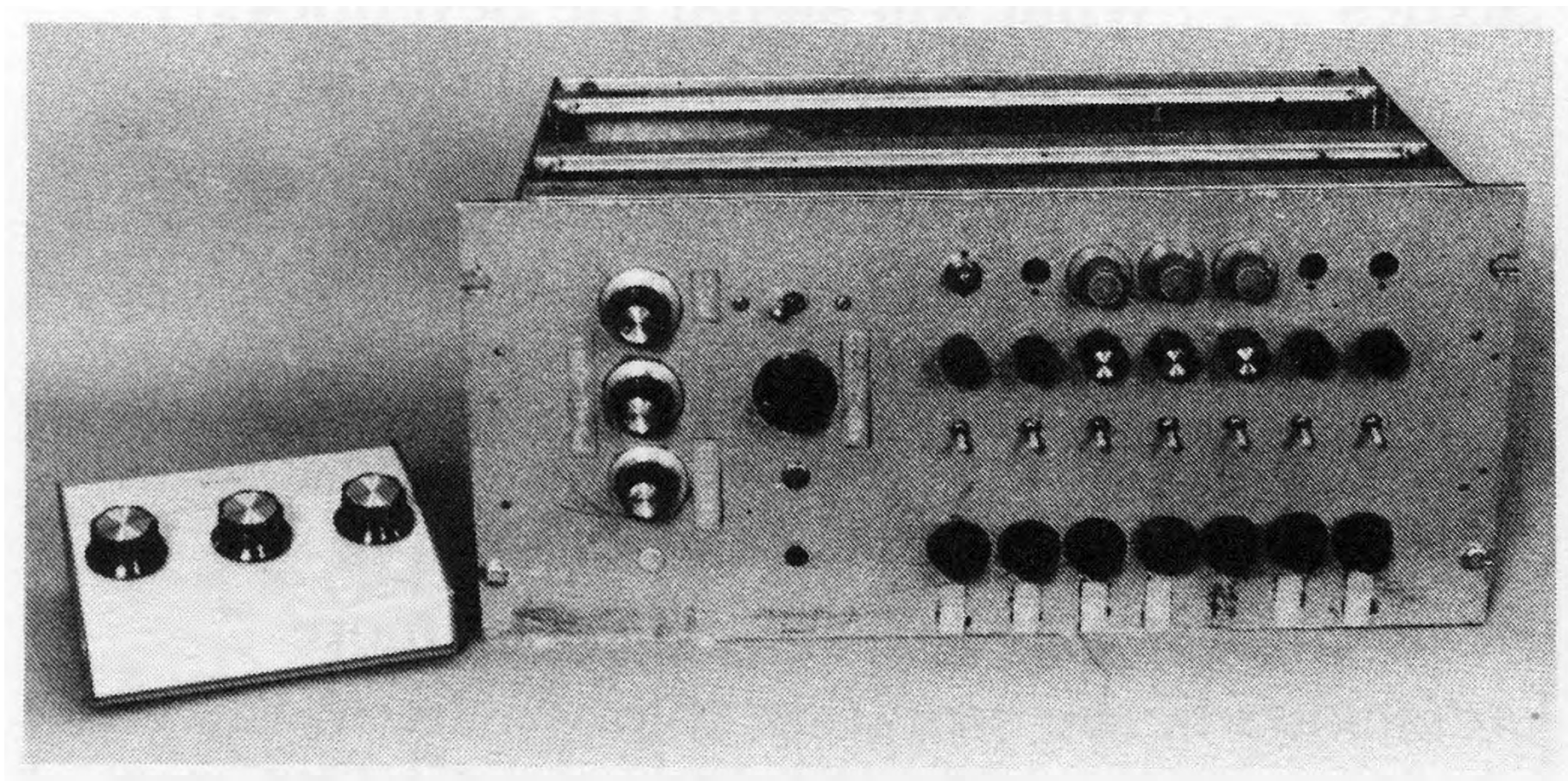
Entre 1975 et aujourd'hui, Woody a consacré une grande partie de son temps au dessin et au travail théorique sur la production d'images digitales. "Une Syntaxe d'Images Binaires" a été publiée dans *Afterimage* (Rochester, N.Y.) l'été 1978. Le Système de Production d'Images Vasulka a été un outil dont se sont servis Woody et Steina, individuellement ou en collaboration.

La série de courts fragments, provisoirement intitulée *Images Digitales*, montrent les premiers résultats des expérimentations d'image avec un système encore en cours d'élaboration. La beauté complexe que révèlent ces fragments et les possibilités qu'ils suggèrent, indiquent la voie pour les futures explorations de l'image électronique par les Vasulkas.

Woody Vasulka est né à Brno, Tchécoslovaquie, et a étudié là-bas les technologies du métal et la mécanique hydraulique à *School of Industrial Engineering*. Il est entré ensuite à l'Academy of Performing Arts, Faculty of Film and Television à Prague, et commença à diriger et produire des courts métrages. Il émigra aux États-Unis et travailla en tant qu'éditeur cinématographique pour Francis Thompson et pour Harvey Lloyd Productions.

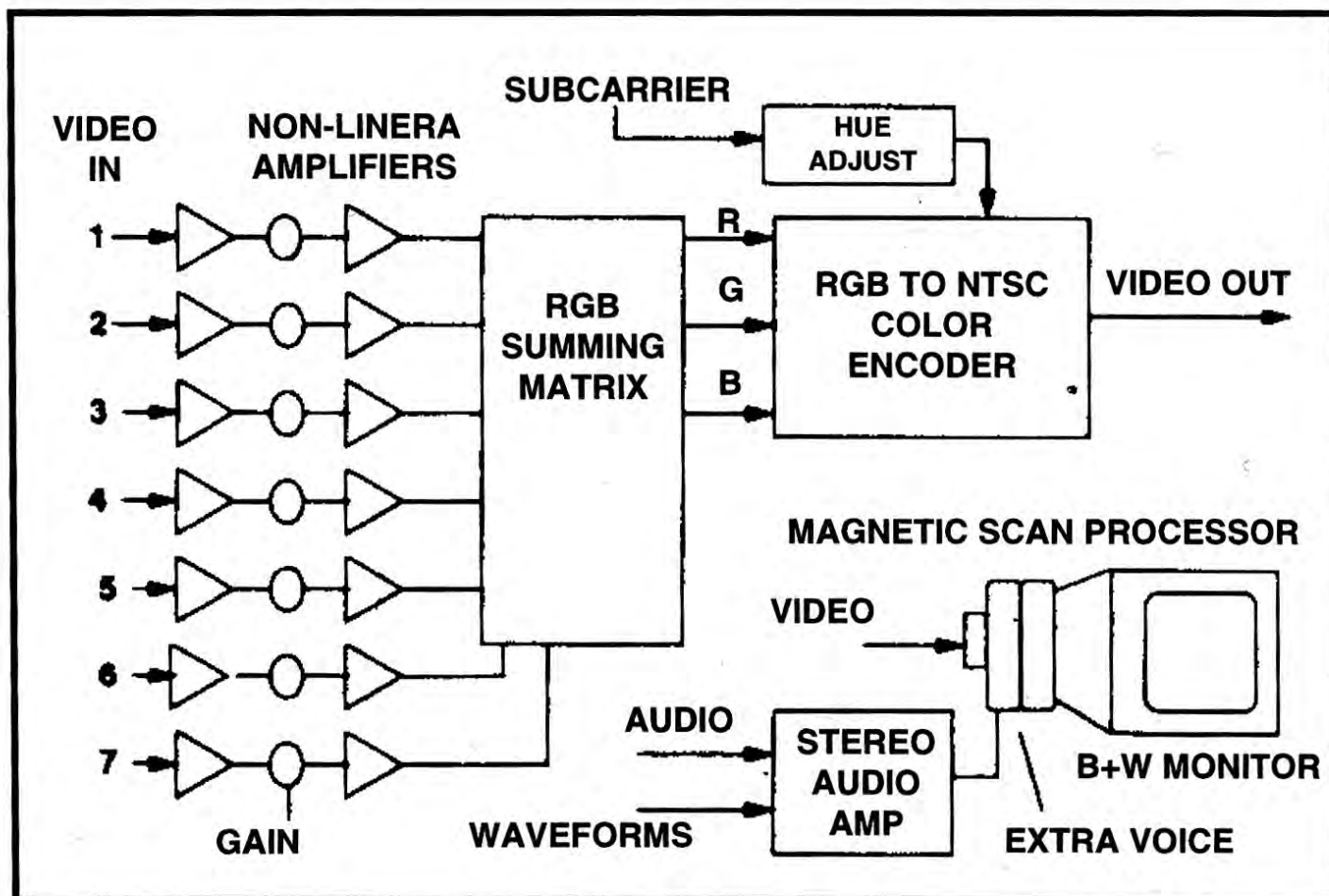
5 Beau Fleuve, s. 23.

Beau Fleuve, p. 23.



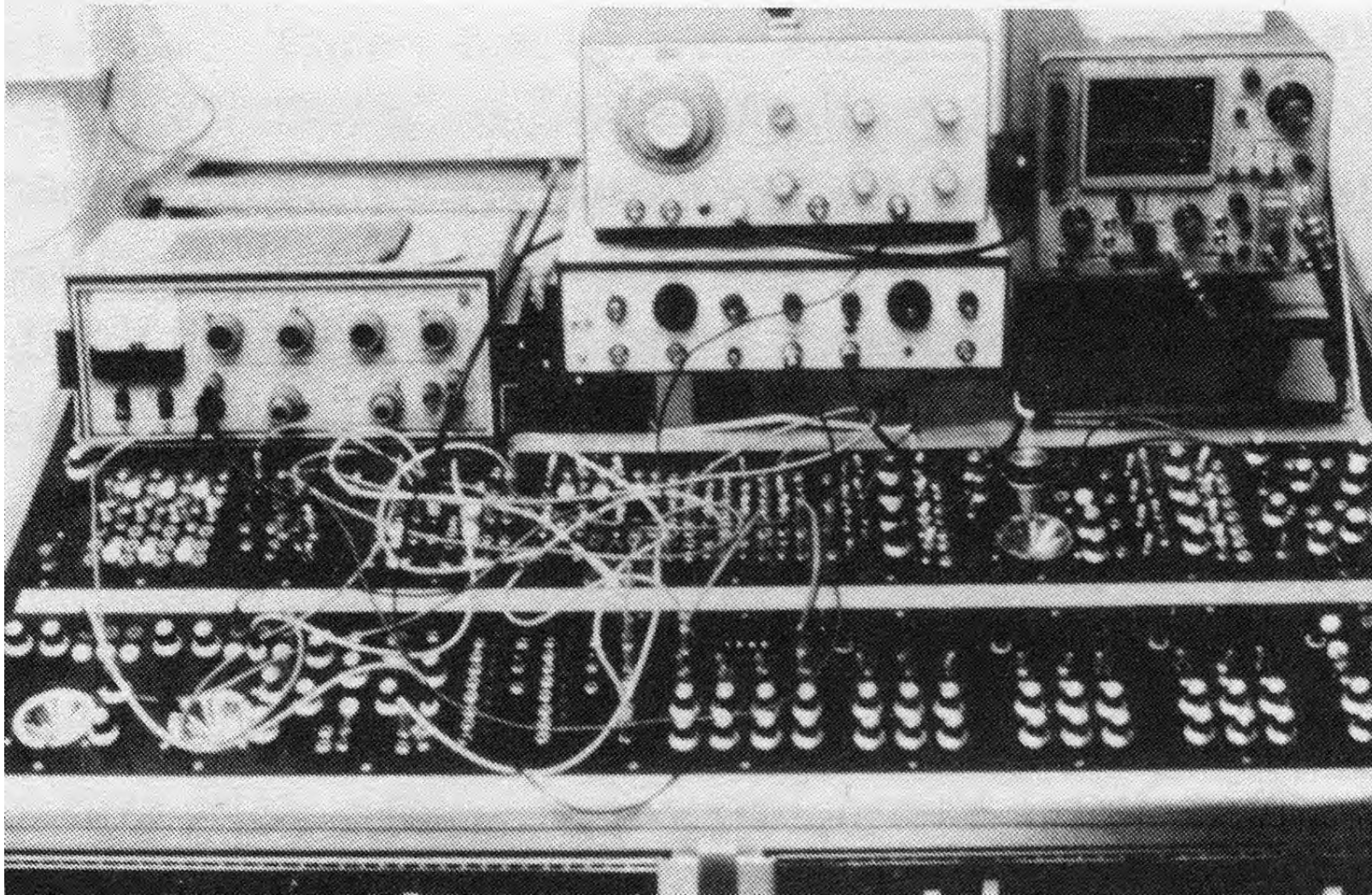
6a Syntezátor Paik-Abe s interfacem

Paik-Abe Synthesizer with Interface



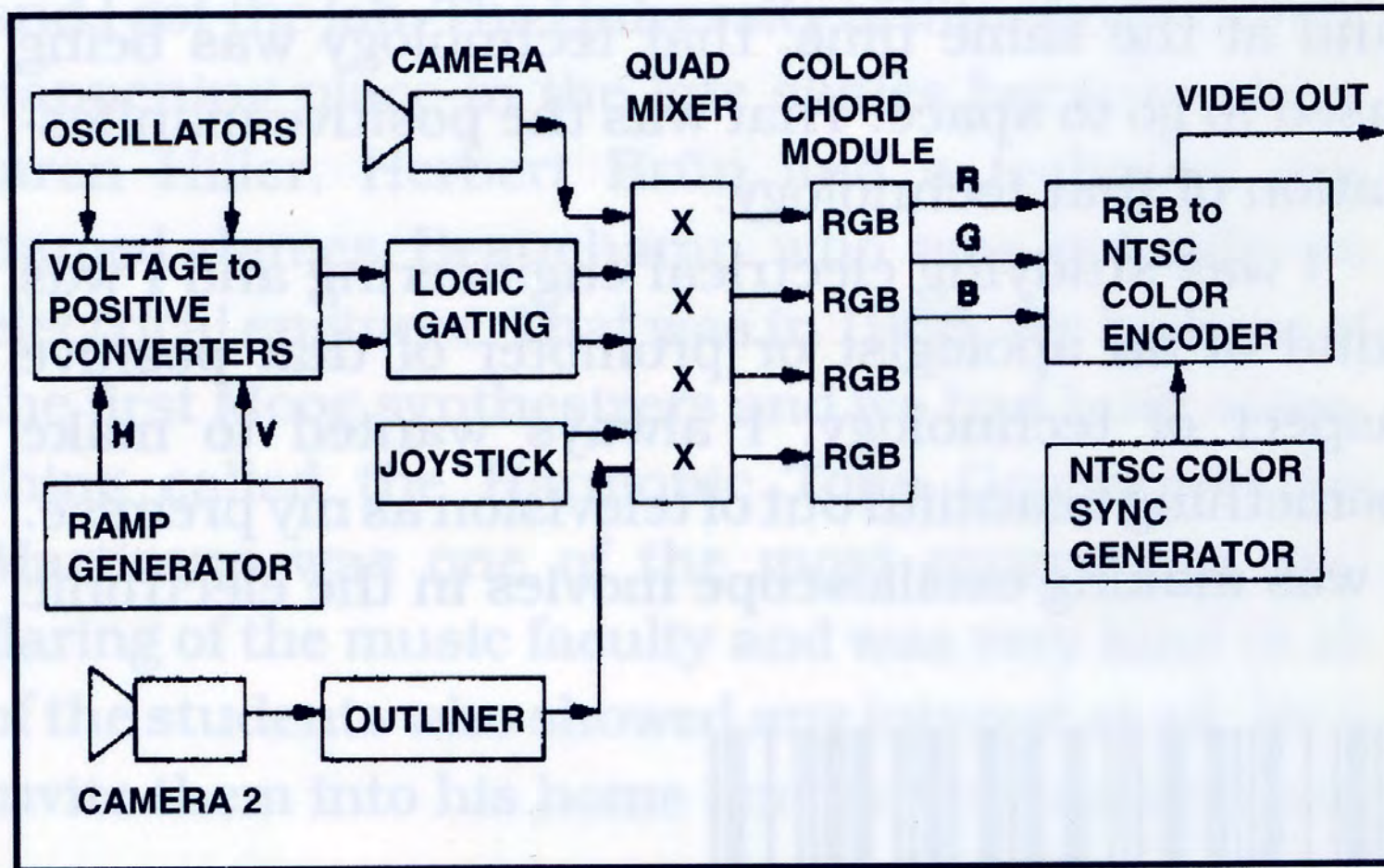
6b Diagram. Peter Weibel, Steina a Woody Vasulkovi a David Dunn: *Pioneers of Electronic Arts – Eigenwelt der Apparate-Welt* (Linz: Ars Electronica 1992), s. 127, 129

Diagram. Peter Weibel, Steina and Woody Vasulka and David Dunn: *Pioneers of Electronic Arts – Eigenwelt der Apparate-Welt* (Linz: Ars Electronica 1992), pp. 127, 129



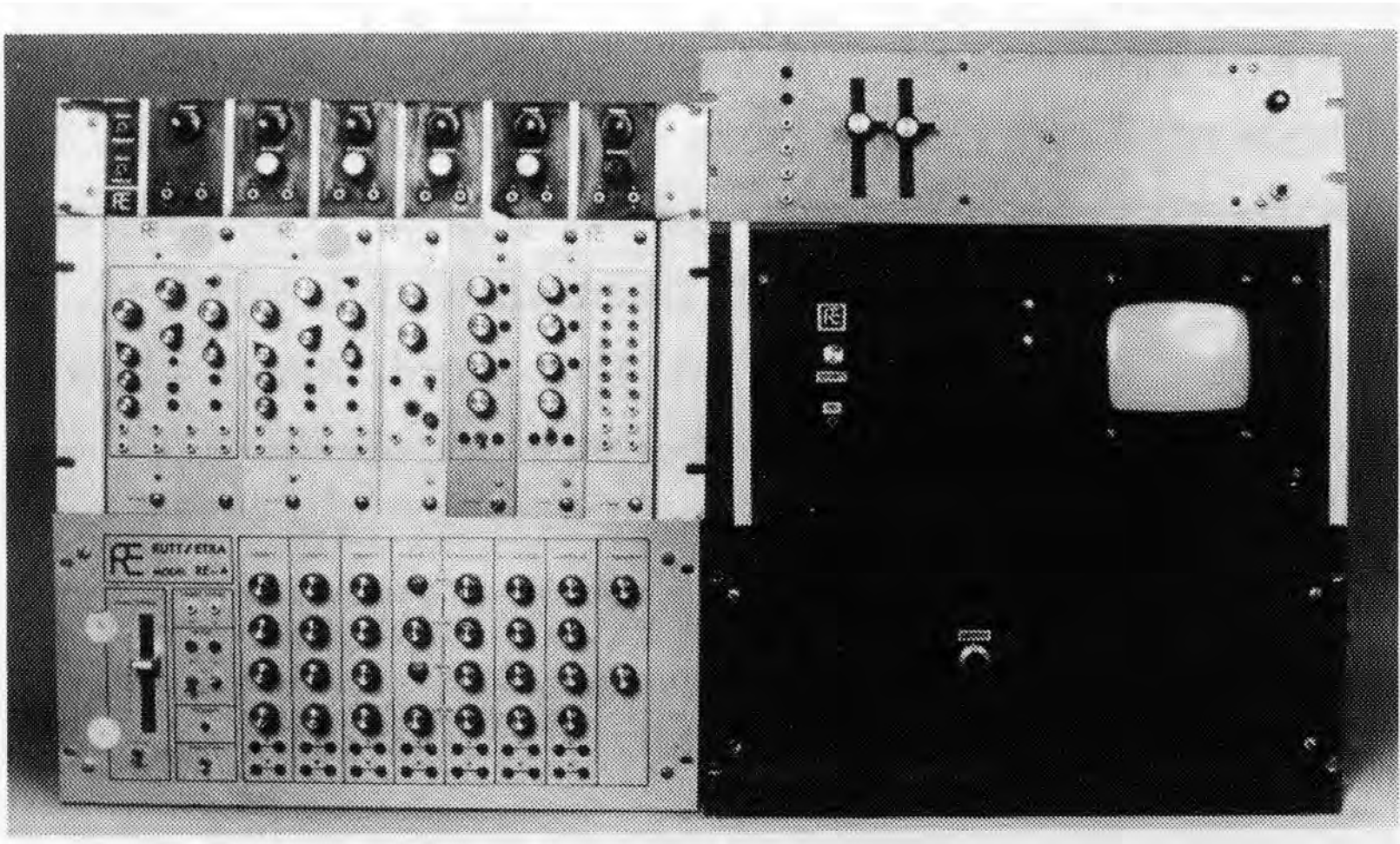
7a Direct Video Synthesizer Stephen Beck

Direct Video Synthesizer of Stephen Beck



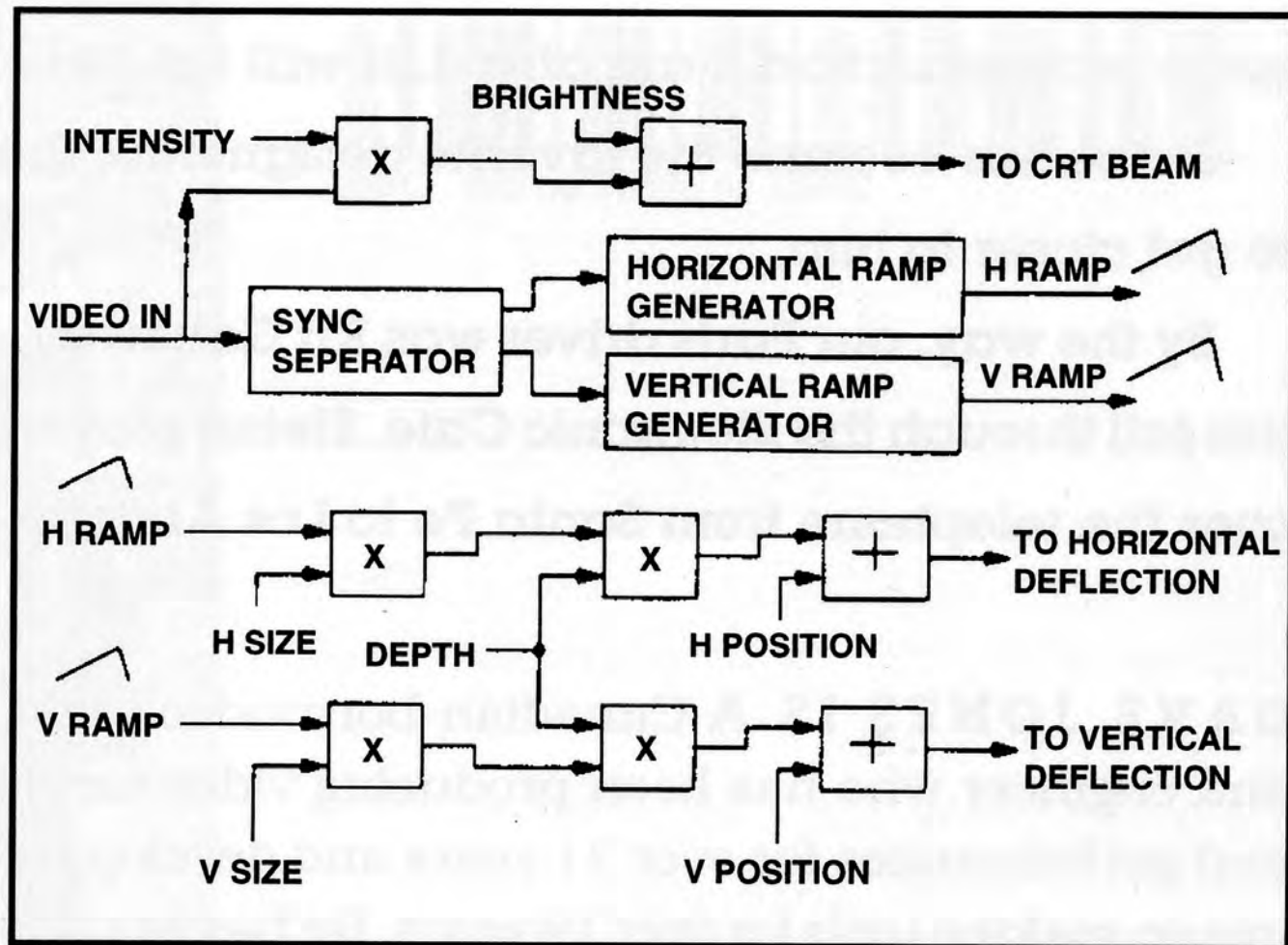
7b Diagram
Pioneers, s. 123, 124

Diagram
Pioneers, pp. 123, 124



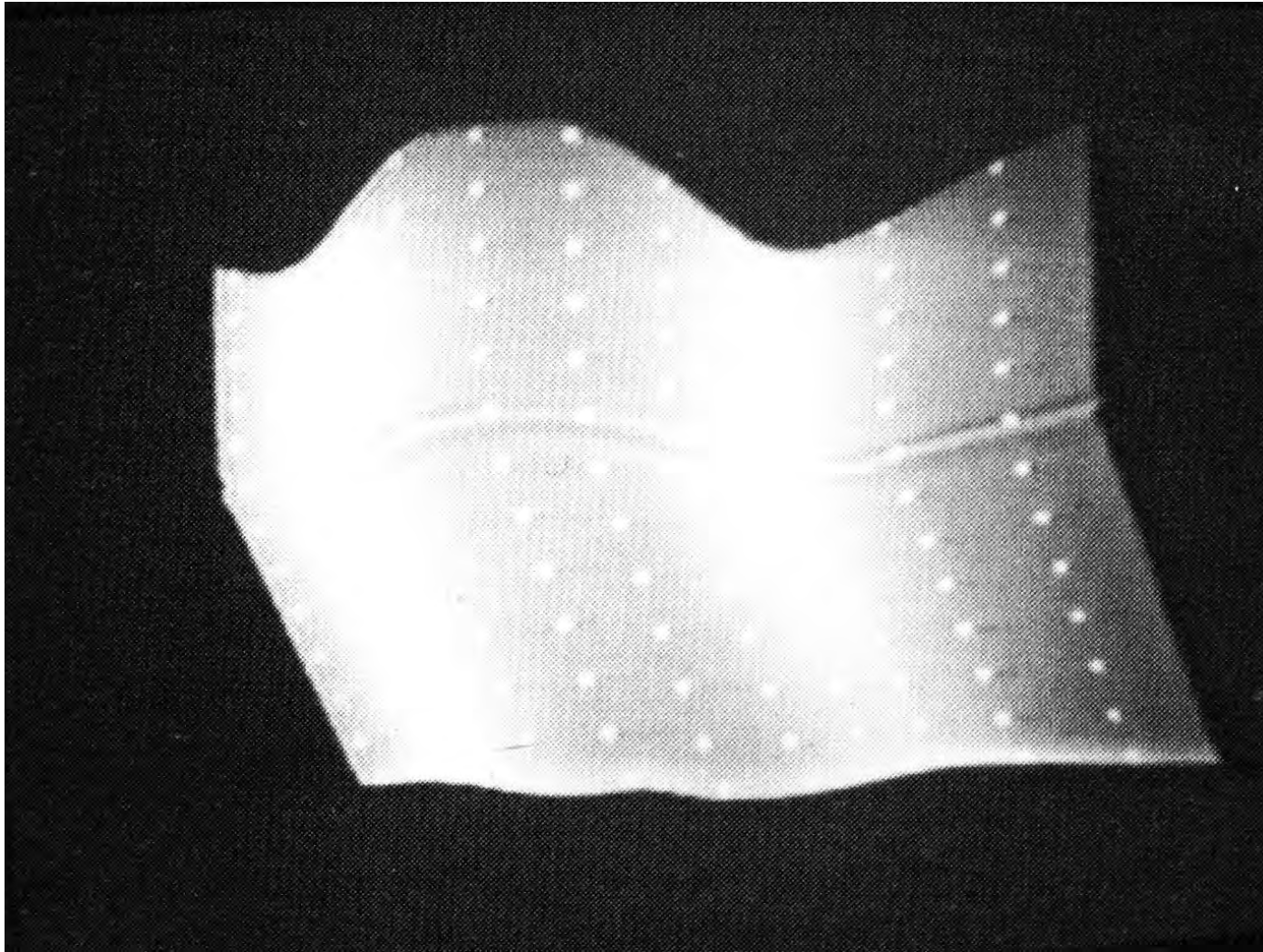
8a Rutt-Etra Scan Processor

Rutt-Etra Scan Processor

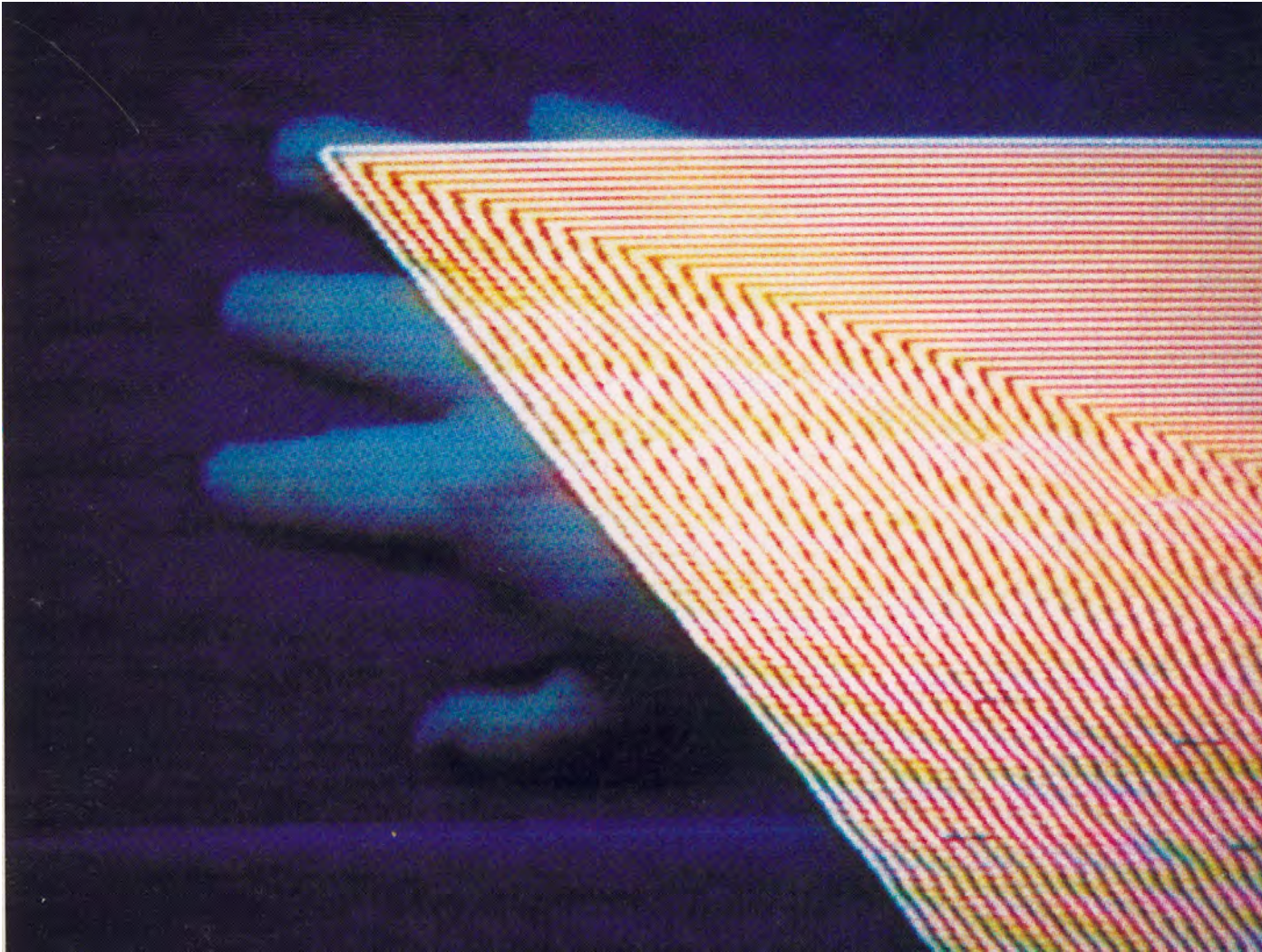


8b Diagram
Pioneers, s. 137, 139

Diagram
Pioneers, pp. 137, 139

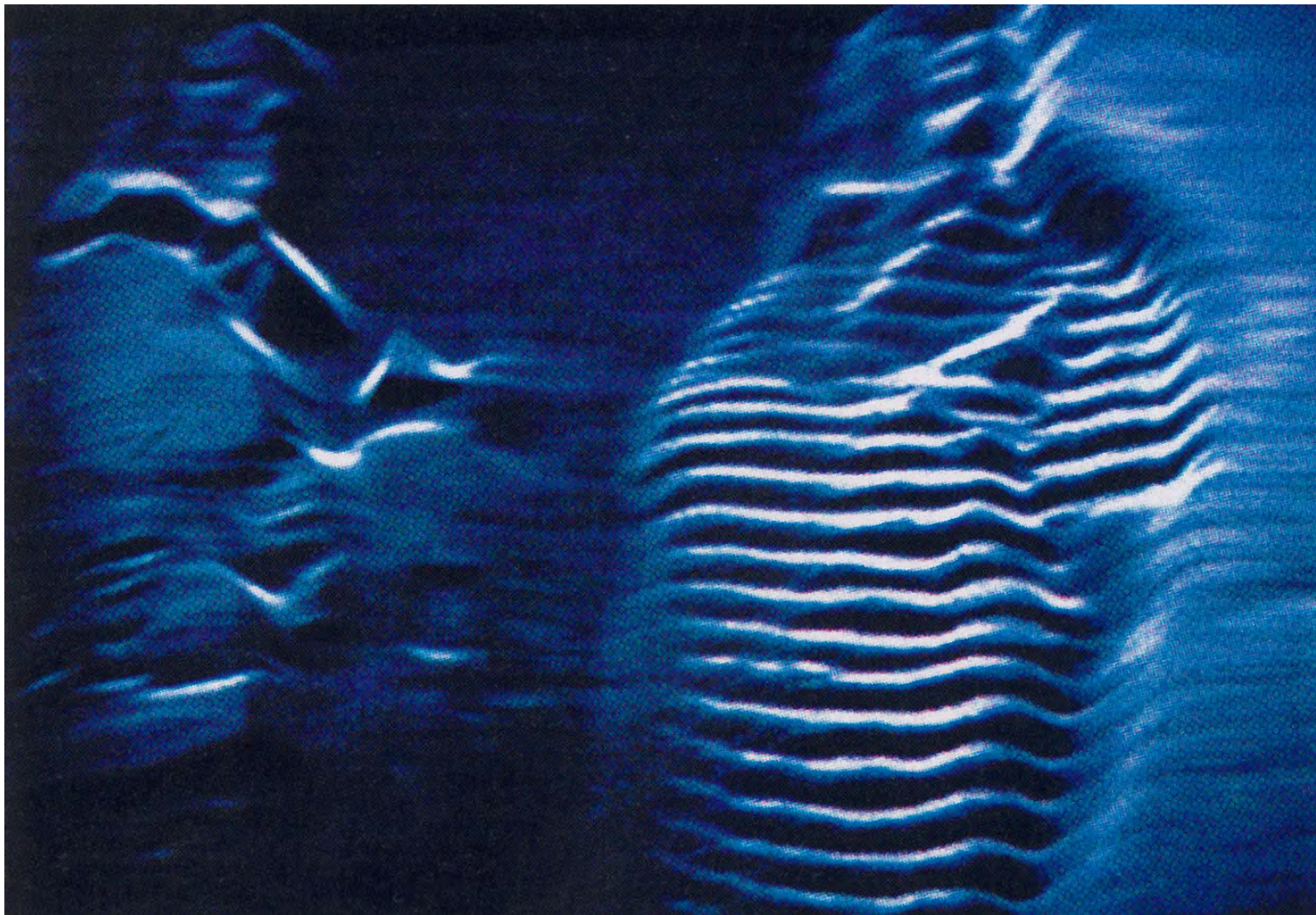


- 9 Woody Vasulka: THE MATTER (1974)
Steina and Woody Vasulka Video Works ICC Collection (Tokio: NTT
InterCommunications Center – ICC Theater 1998), s. 42
- Woody Vasulka: THE MATTER (1974)
Steina and Woody Vasulka Video Works ICC Collection (Tokyo: NTT
InterCommunications Center – ICC Theater 1998), p. 42



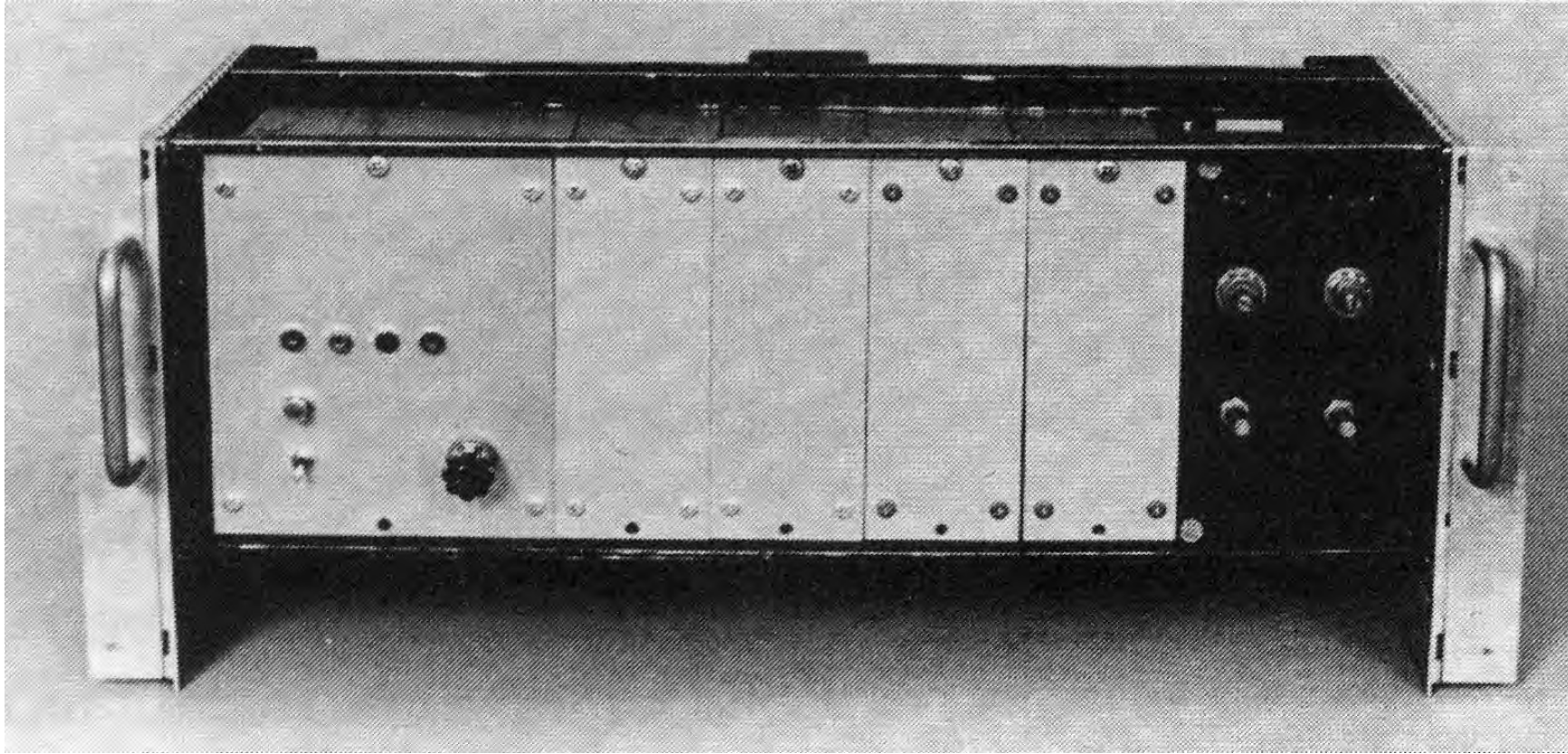
10 Woody Vasulka: VOCABULARY (1973)
Steina and Woody Vasulka Video Works, s. 5

Woody Vasulka: VOCABULARY (1973)
Steina and Woody Vasulka Video Works, p. 5



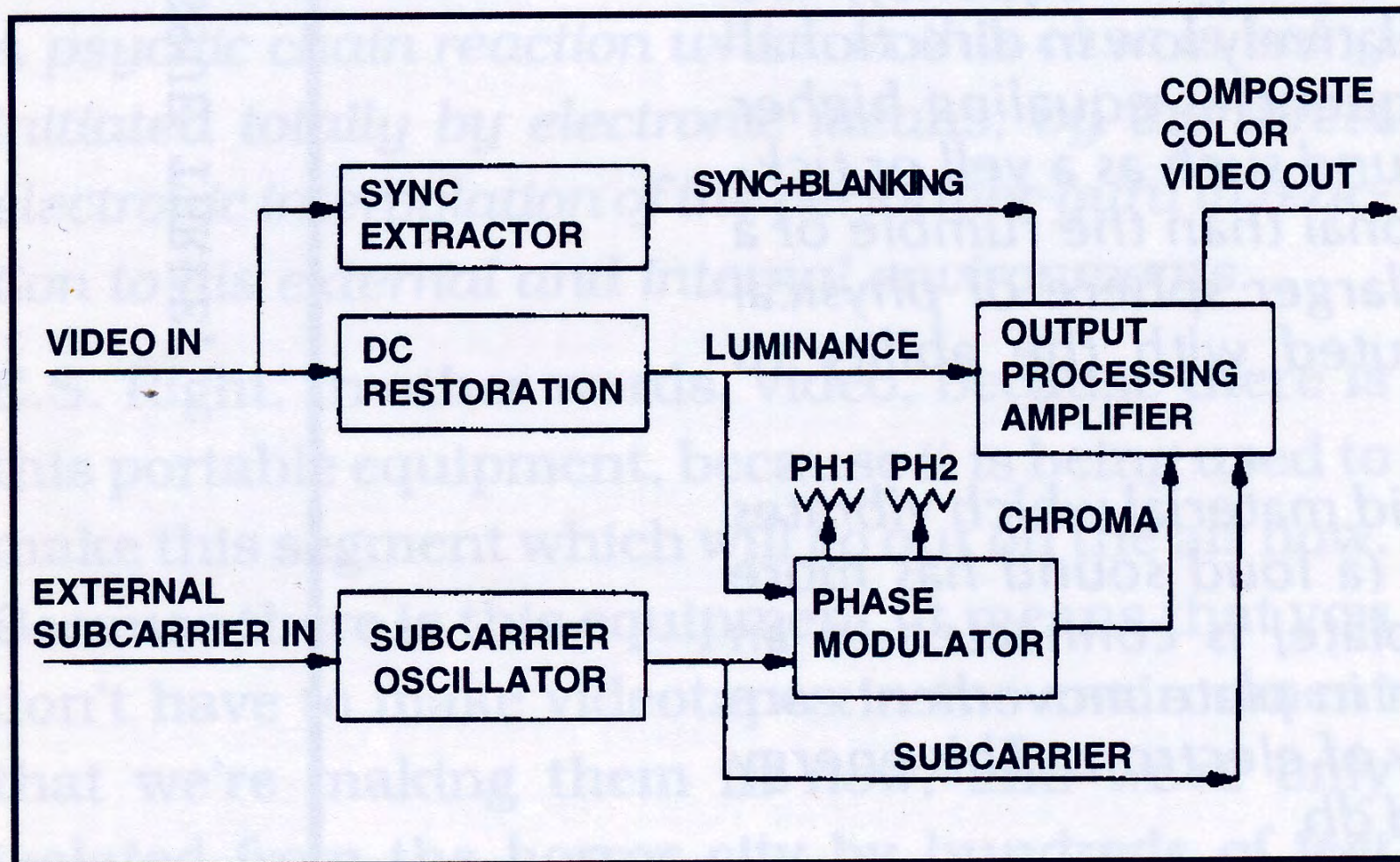
11 Woody Vasulka: REMINISCENCE (1974)
Steina and Woody Vasulka Video Works, s. 5

Woody Vasulka: REMINISCENCE (1974)
Steina and Woody Vasulka Video Works, p. 5



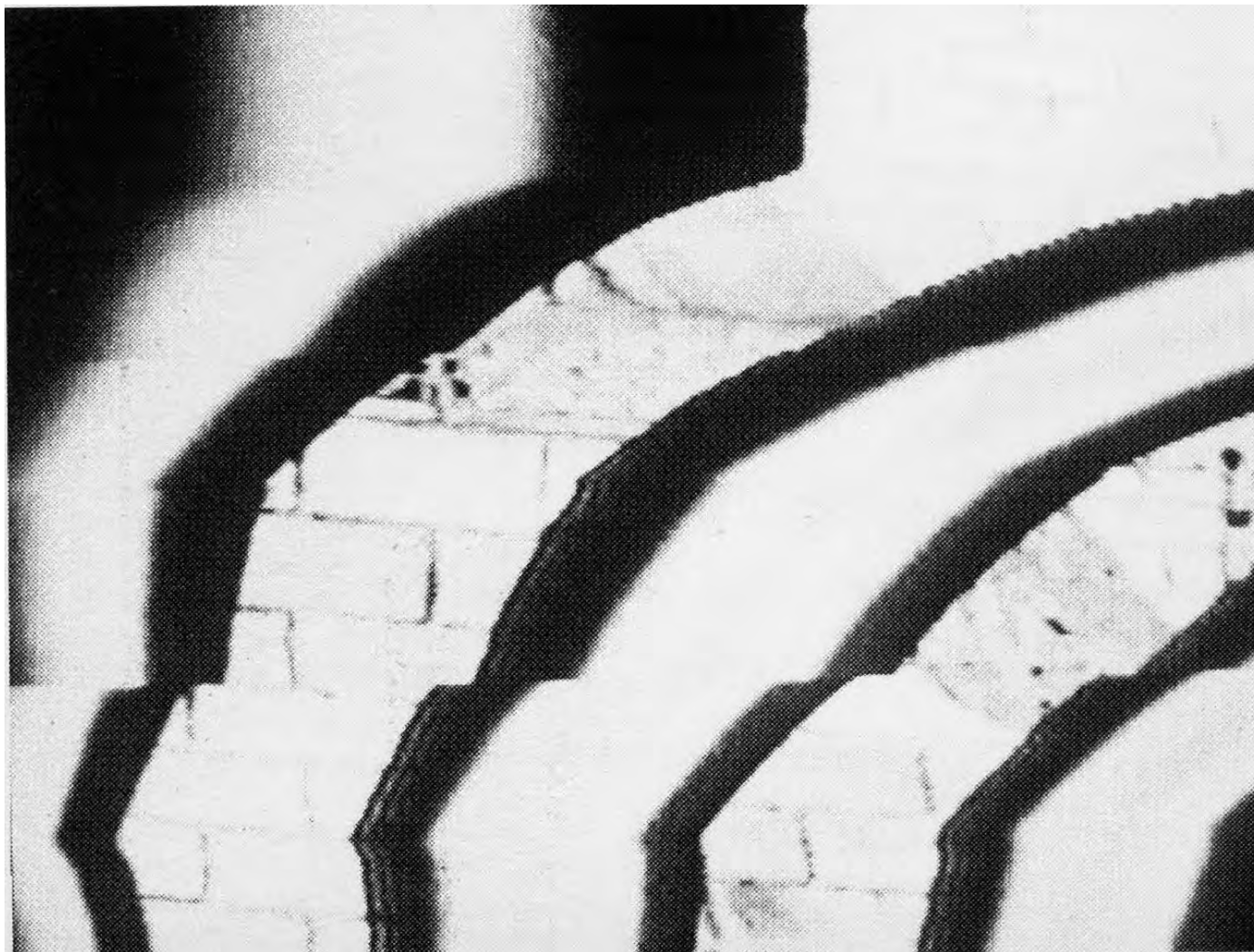
12a Eric Siegel, Dual-Colorizer

Eric Siegel, Dual-Colorizer



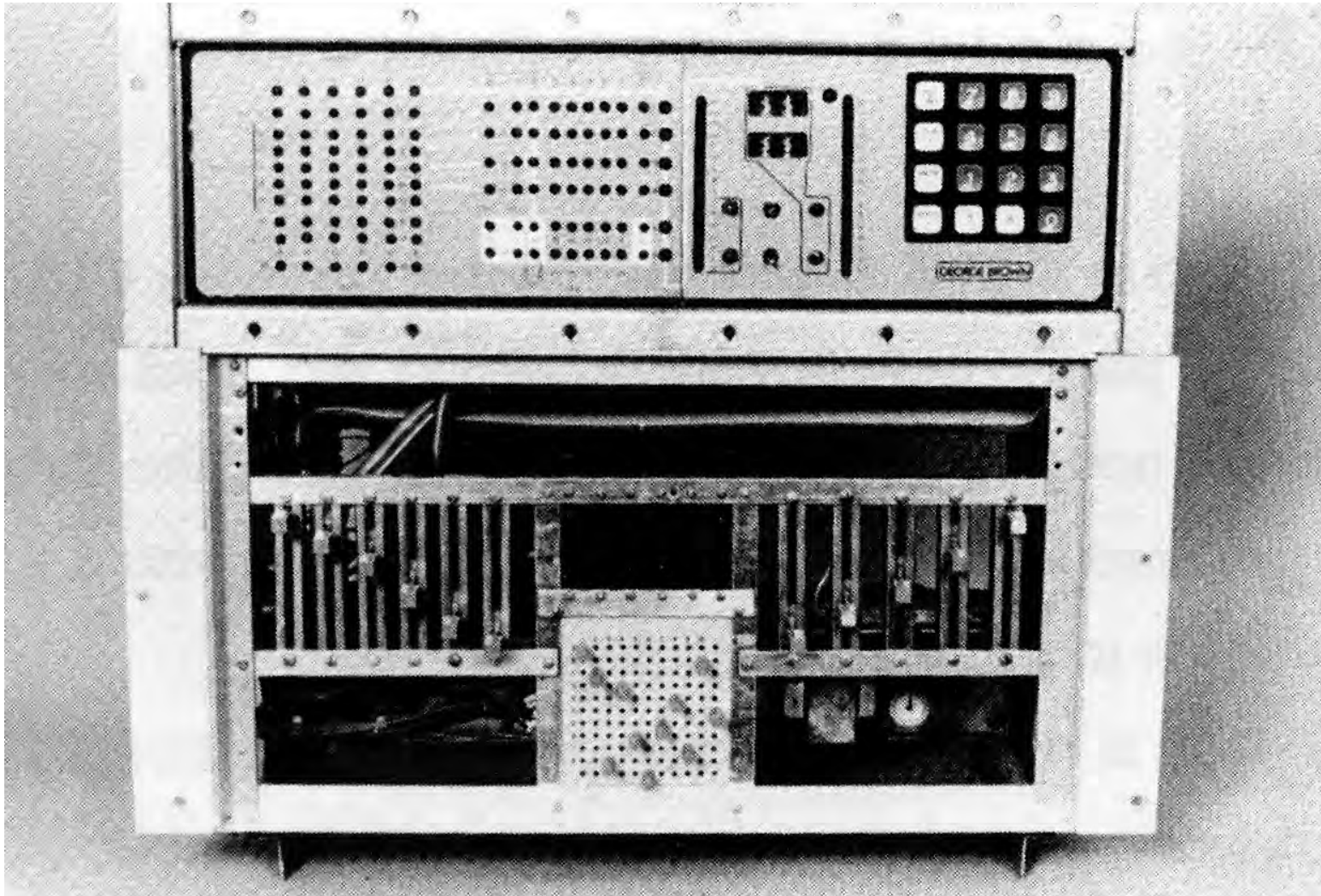
12b Diagram
Pioneers, s. 117, 120

Diagram
Pioneers, pp. 117, 120



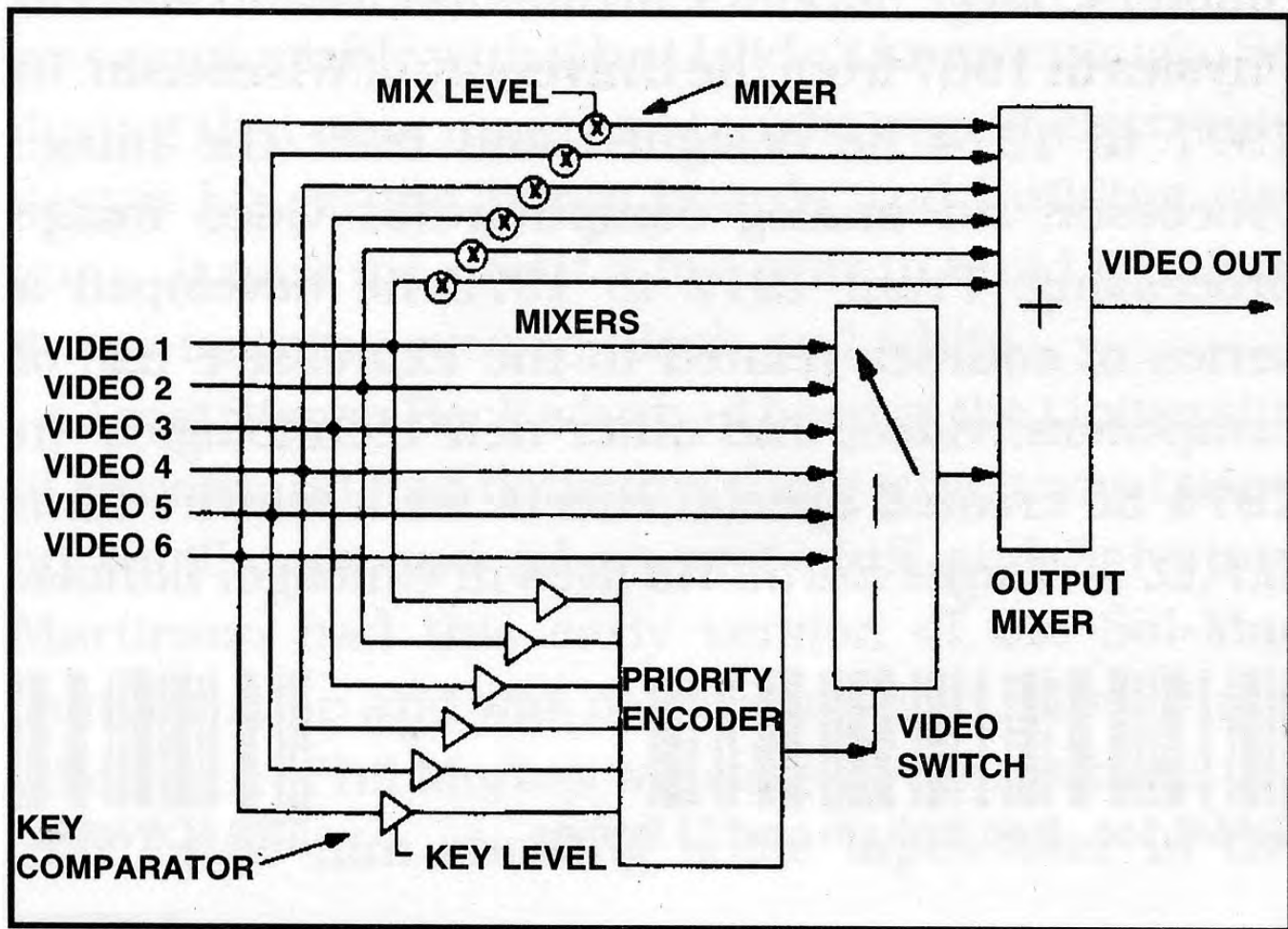
13 Steina a Woody Vasulkovi: HERALDIC VIEW (1974)
Steina and Woody Vasulka Video Works, s. 34

Steina and Woody Vasulka: HERALDIC VIEW (1974)
Steina and Woody Vasulka Video Works, p. 34



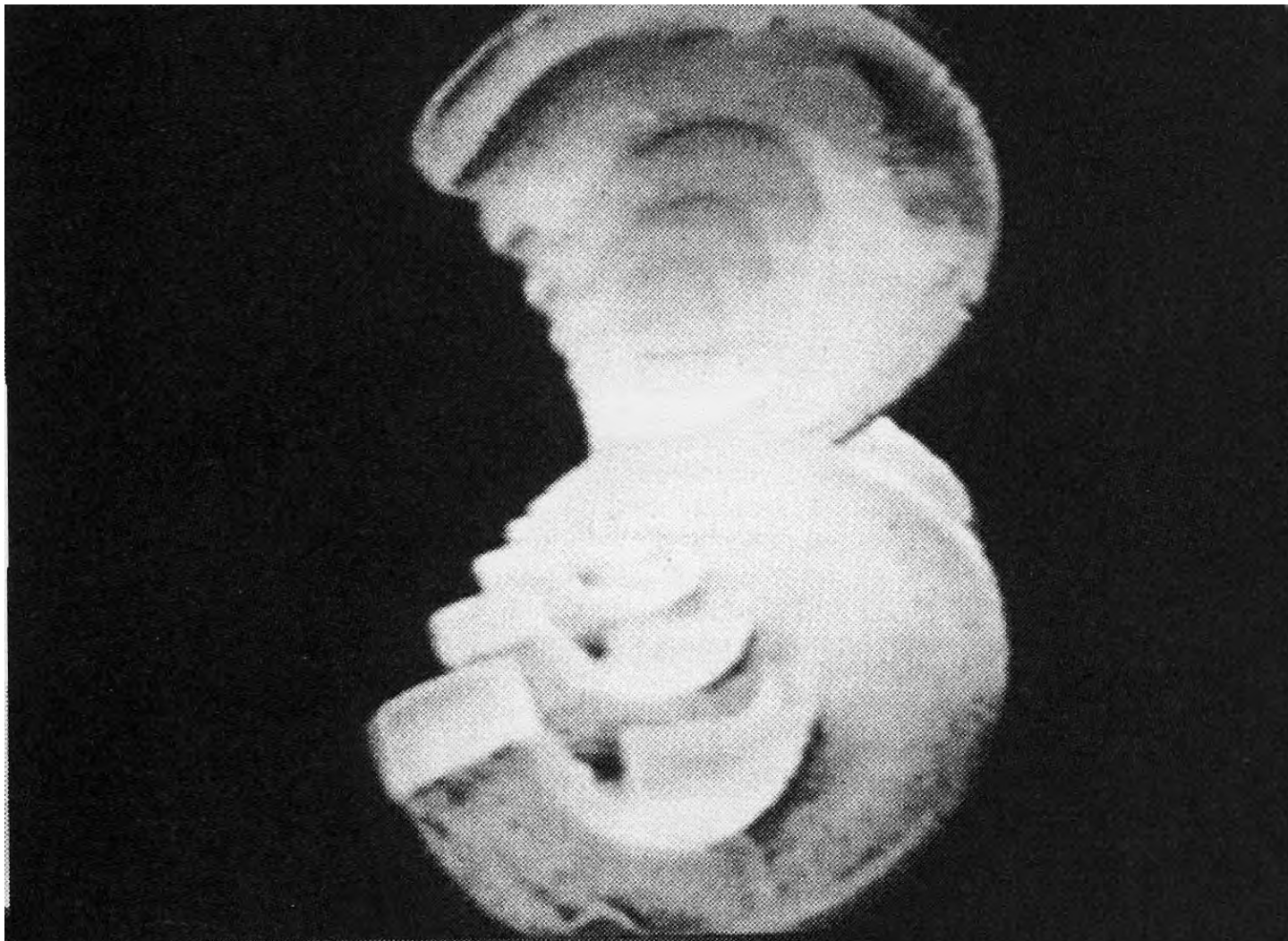
14a George Brown Multikeyer

George Brown Multikeyer



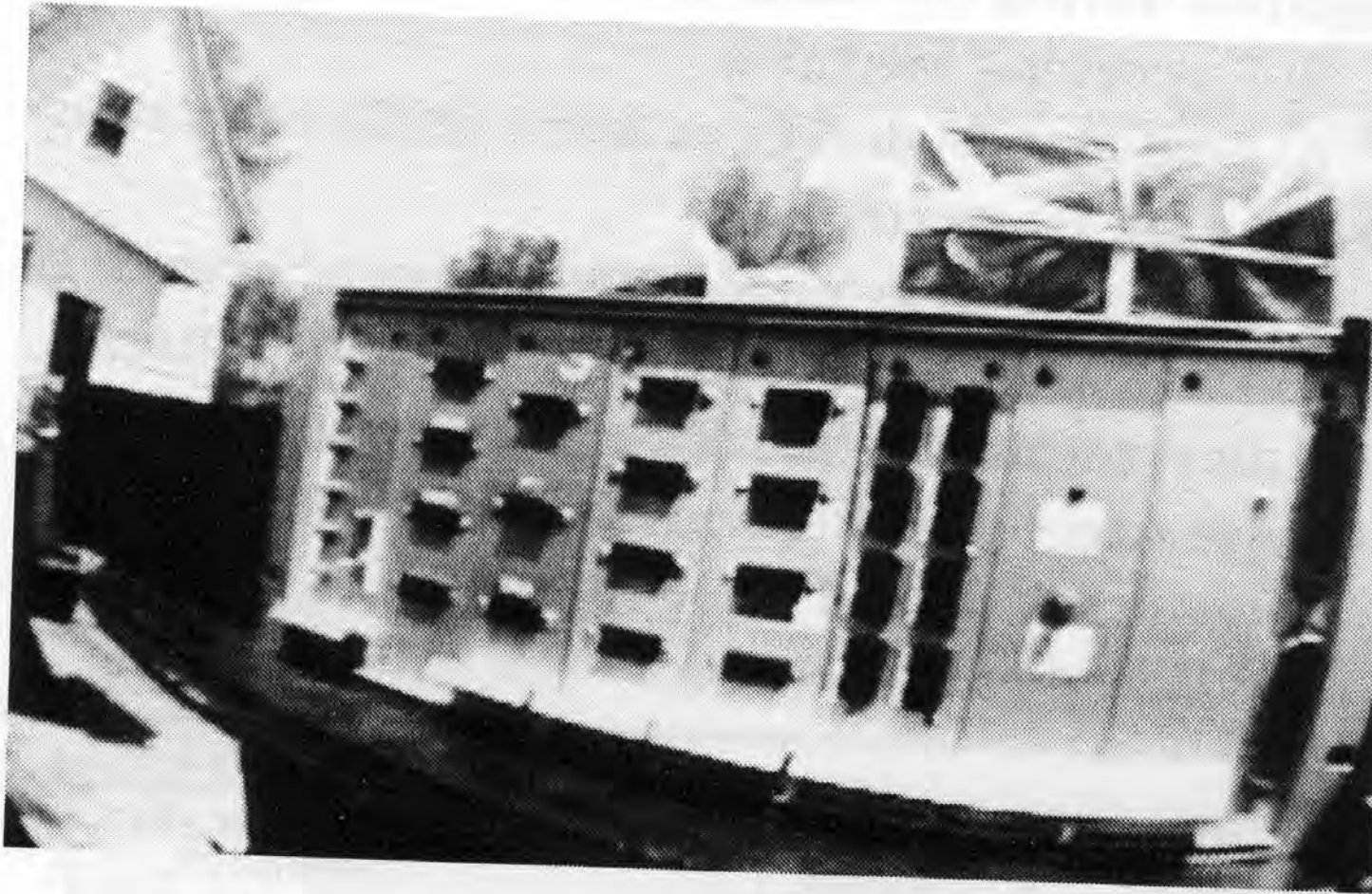
14b Diagram
Pioneers, s. 131

Diagram
Pioneers, p. 131



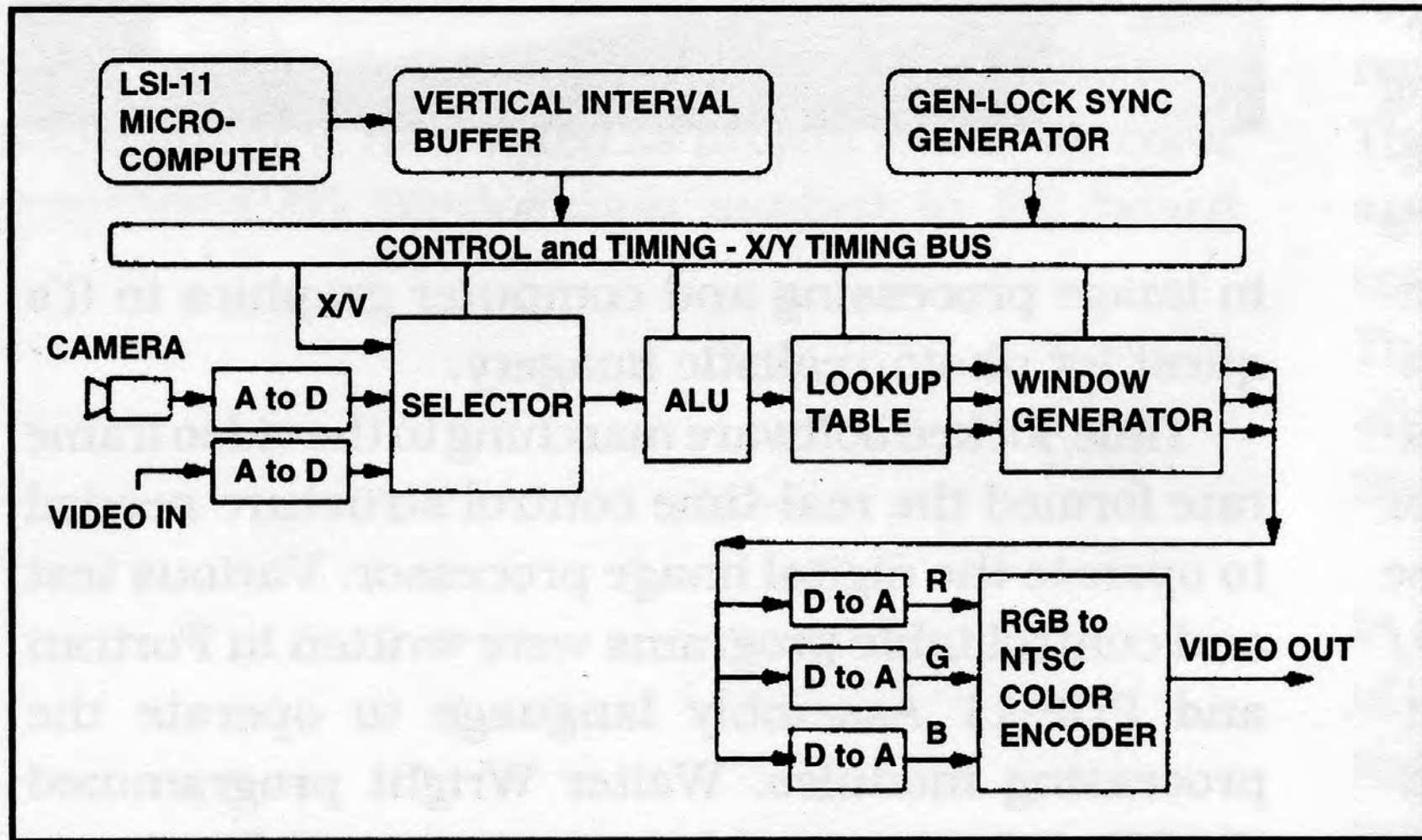
15 Steina a Woody Vasulkovi: SOLO FOR 3 (1974)
Steina and Woody Vasulka Video Works, s. 32

Steina and Woody Vasulka: SOLO FOR 3 (1974)
Steina and Woody Vasulka Video Works, p. 32



16a Imaging System Woodyho Vasulky a Jeffreyho Schiera

Woody Vasulka and Jeffrey Schier Imagining System



16b Diagram
Pioneers, s. 145, 146

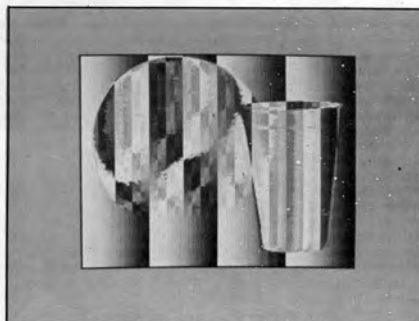
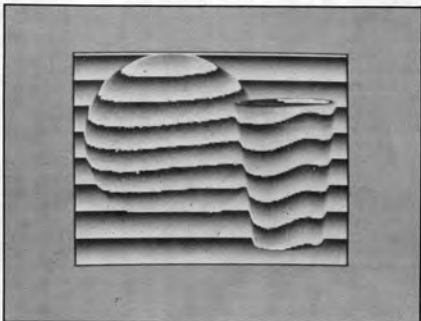
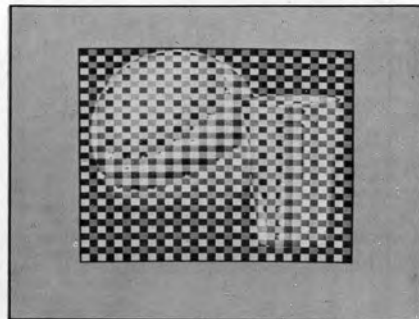
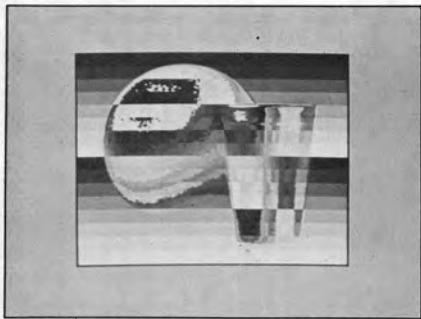
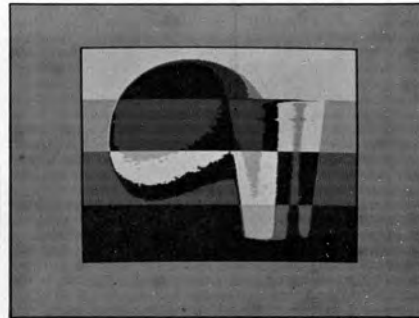
Diagram
Pioneers, pp. 145, 146

THIS ISSUE IS IN TWO SECTIONS

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A PUBLICATION OF THE VISUAL STUDIES WORKSHOP
SUMMER 1978 VOLUME 6, NUMBERS 1&2



Special double issue

17a *Afterimage 6*, 1978 (léto), č. 1 & 2. Obal

Afterimage 6, 1978 (Summer), nr. 1 & 2. Cover

A SYNTAX OF BINARY IMAGES

The analysis of the phenomena of electronic tools and the sequence in which they appear in an art context, from audio synthesis through video as art and craft, has been a preoccupation of mine for some time.

The images in this article are the result of my first encounter with digitally-organized imaging. This process provides clues to more complex types of electronic imaging, more complex in the methods of control and of codifying imaging systems.

The definition of a cultural or a system code has been talked about with various degrees of success. I want to point to the primary level of codes, notably the binary code operation, as a principle of imaging and image processing. This may require accepting and incorporating this primitive structure (the binary code) into our views of literacy, in the form of binary language, in order to maintain communication with the primary materials at all levels and from any distance.

The dramatic moment of the transformation into a binary code of energy events in time, as they may be derived from light, or the molecular communication of sound, or from a force field, gravity, or other physical initiation, has to be realized, in order to appreciate the power of the organization and transformation of a code. The process of analog-to-digital and digital-to-analog conversion envelopes the internal digital-code operations, the state of the world, which is exclusively man-organized and cross-disciplinary. The unity of the coding structure has laid down an astonishingly versatile material from which codes are constructed and from which the hierarchical order of codes can originate.

These states of transformation exist in as many time domains as the generation, organization, or processing of codes require, for the media they represent. (A complex sound, for example, can operate in a lower time domain than a complex dynamic image, while other media—for example, printed text generation—seem more time-immune.)

In this way, time assumes a new compositional meaning, a microcompositional one, where control over the generation of an image can be exerted even in short or very short lengths of time. That in itself signals an urgency to define the craft, in which the notion of time dominates.

THE ARITHMETIC LOGIC UNIT (ALU)

The arithmetic logic unit (ALU) is not an image-producing device by its concept. It is a basic component of a digital computer, and performs a set of functions based on Boolean logic primitives and their arithmetic combinations. These functions are listed in the table reproduced below.

The purpose of these picture tableaux (numbers 1-13) is to observe and identify changes which occur when two coherent structures, (A,B), when used as inputs to the ALU, interact in a number of ways: when they are compared, and one input is given priority over the other; and when they are combined in both linear and discrete ways. These

interactions are determined by the Boolean (and some arithmetic) functions incorporated in the ALU. Taken together, these operations provide a universal, unambiguous score of the image, which can be reproduced, identically, through a notational code created in this way.

In practice, the ALU is an electronic circuit, packaged into a 22-pin chip (74181). It can operate on two sets of four-bit inputs simultaneously. These sets are called (A,B). In addition, the ALU needs a four-bit control "word" to select a function, and two other bits as well: one to set the carry bit, and the other to select either the logic or the arithmetic mode of operation. The ALU is capable of real-time (video) operation.

The input elements (A,B) are organized in three steps of complexity, expressed through groups and associated densities of one bit (two screen divisions); two bits (four screen divisions); and four bits (16 screen divisions).

The images in each tableau illustrate the operation of each of the sequence of functions listed in the following table.

In the second variation (Tableaux 2, 4, 6, 8, and 10), the vertical component (input B) is exchanged for an image from the TV camera, showing a sphere and a cup. The camera image is digitized, delivering a binary code of zero, one, two, and four bits to the ALU input, representing two, four, and 16 densities of grey scale of the image (one, two, and four bits of resolution).

—Woody Vasulka

BOOLEAN PRIMITIVE FUNCTIONS PERFORMED BY THE ALU

M=H LOGIC FUNCTIONS	M=L ARITHMETIC Cn = L (no carry)	OPERATIONS Cn = H (with carry)
$F = \bar{A}$	$F = A \text{ MINUS } 1$	$F = A$
$F = \bar{A} \bar{B}$	$F = AB \text{ MINUS } 1$	$F = AB$
$F = \bar{A} + B$	$F = AB \text{ MINUS } 1$	$F = AB$
$F = 1$	$F = \text{MINUS } 1 (2's \text{ COMP})$	$F = \text{ZERO}$
$F = A + B$	$F = A \text{ PLUS } (A + B)$	$F = A \text{ PLUS } (A + B) \text{ PLUS } 1$
$F = B$	$F = AB \text{ PLUS } (A + B)$	$F = AB \text{ PLUS } (A + B) \text{ PLUS } 1$
$F = A \oplus B$	$F = A \text{ MINUS } B \text{ MINUS } 1$	$F = A \text{ MINUS } B$
$F = A + \bar{B}$	$F = A + B$	$F = (A + B) \text{ PLUS } 1$
$F = \bar{A} B$	$F = A \text{ PLUS } (A + B)$	$F = A \text{ PLUS } (A + B) \text{ PLUS } 1$
$F = A \oplus B$	$F = A \text{ PLUS } B$	$F = A \text{ PLUS } B \text{ PLUS } 1$
$F = B$	$F = AB \text{ PLUS } (A + B)$	$F = AB \text{ PLUS } (A + B) \text{ PLUS } 1$
$F = A + B$	$F = (A + B)$	$F = (A + B) \text{ PLUS } 1$
$F = 0$	$F = A \text{ PLUS } A$	$F = A \text{ PLUS } A \text{ PLUS } 1$
$F = \bar{A} B$	$F = AB \text{ PLUS } A$	$F = AB \text{ PLUS } A \text{ PLUS } 1$
$F = AB$	$F = AB \text{ PLUS } A$	$F = AB \text{ PLUS } A \text{ PLUS } 1$
$F = A$	$F = A$	$F = A \text{ PLUS } 1$

•Each bit is shifted to the next more significant position

Where A = uninverted value of A

\bar{A} = inverted value of A

AB = A and B (logic symbol for "And")

$A + B$ = A or B (logic symbol for "or")

$A \oplus B$ = A xor B (logic symbol for "exclusive or"—a function that has a value, of 1, if only one of the input variables is present)



Woody Vasulka (photograph by Charles Hagen)

17b Tamtéž, s. 20

Ibid. p. 20



18 Digitální obraz Steiny
Beau Fleuve, s. 23

Digital Image of Steina
Beau Fleuve, p. 23



19a John Minkowsky ve vlaku z německého Karlsruhe do Prahy (1999)
Foto Gerald O'Grady

John Minkowsky on train from Karlsruhe, Germany, to Prague (1999)
Photo by Gerald O'Grady



19b John Minkowsky, kurátor, 1978. Foto Jane Hartney
Beau Fleuve, s. 4

John Minkowsky, Curator, 1978. Photo by Jane Hartney
Beau Fleuve, p. 4



- 20 Fred Barzyk, Shuya Abe a Nam June Paik ve WGBH-2 (Boston, Massachusetts, 1969). *Foto Conrad White*
Wulf Herzogenrath (ed.): *Nam June Paik Fluxus Video*
(Kunsthalle Bremen 1999), s. 136
- Fred Barzyk, Shuya Abe and Nam June Paik at WGBH-2 (Boston, Massachusetts, 1969). *Photo by Conrad White*
Wulf Herzogenrath (ed.): *Nam June Paik Fluxus Video*
(Kunsthalle Bremen 1999), p. 136



21 Stephen Beck
Pioneers, s. 123

Stephen Beck
Pioneers, p. 123



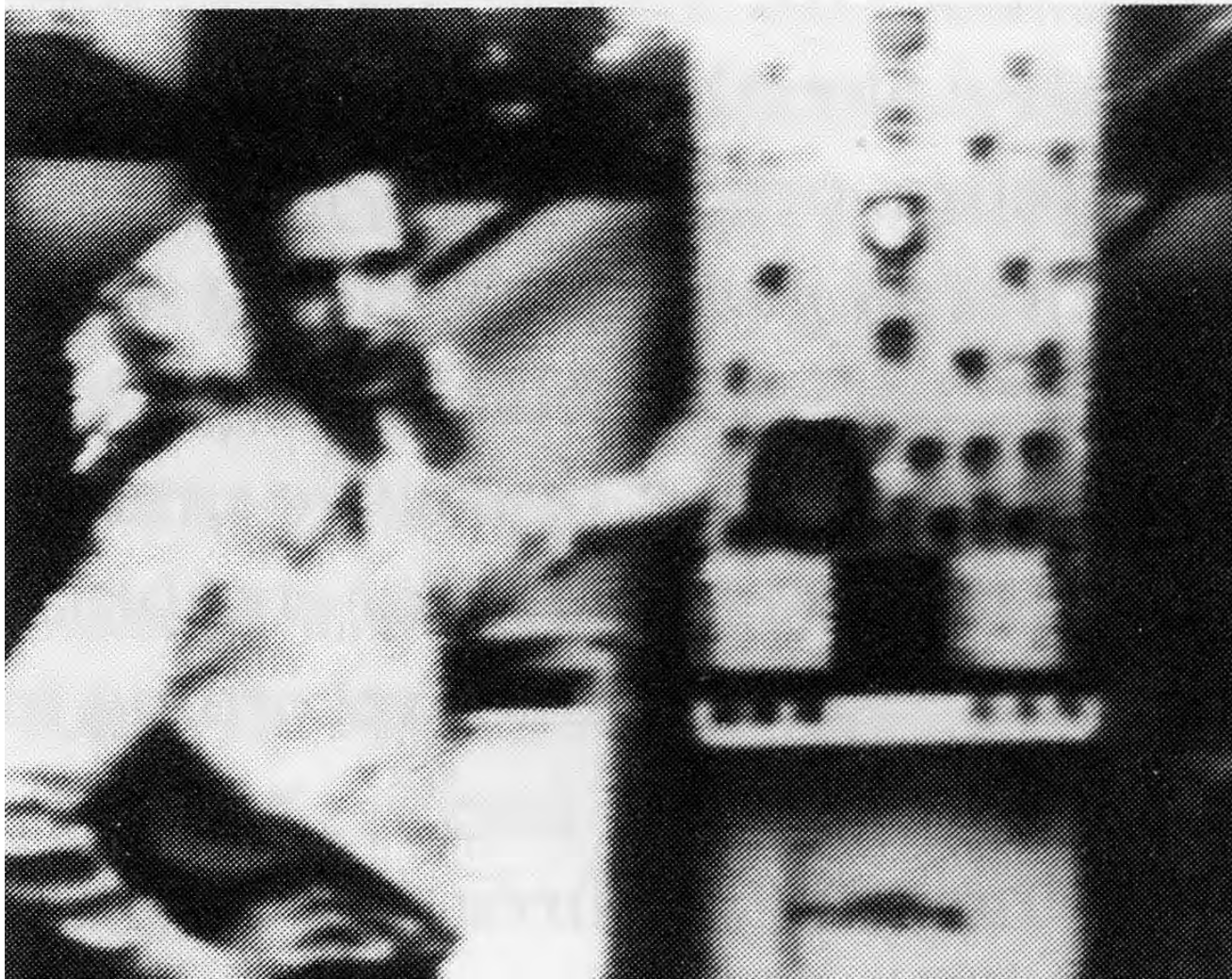
22 Bill Etra
Pioneers, s. 137

Bill Etra
Pioneers, p. 137



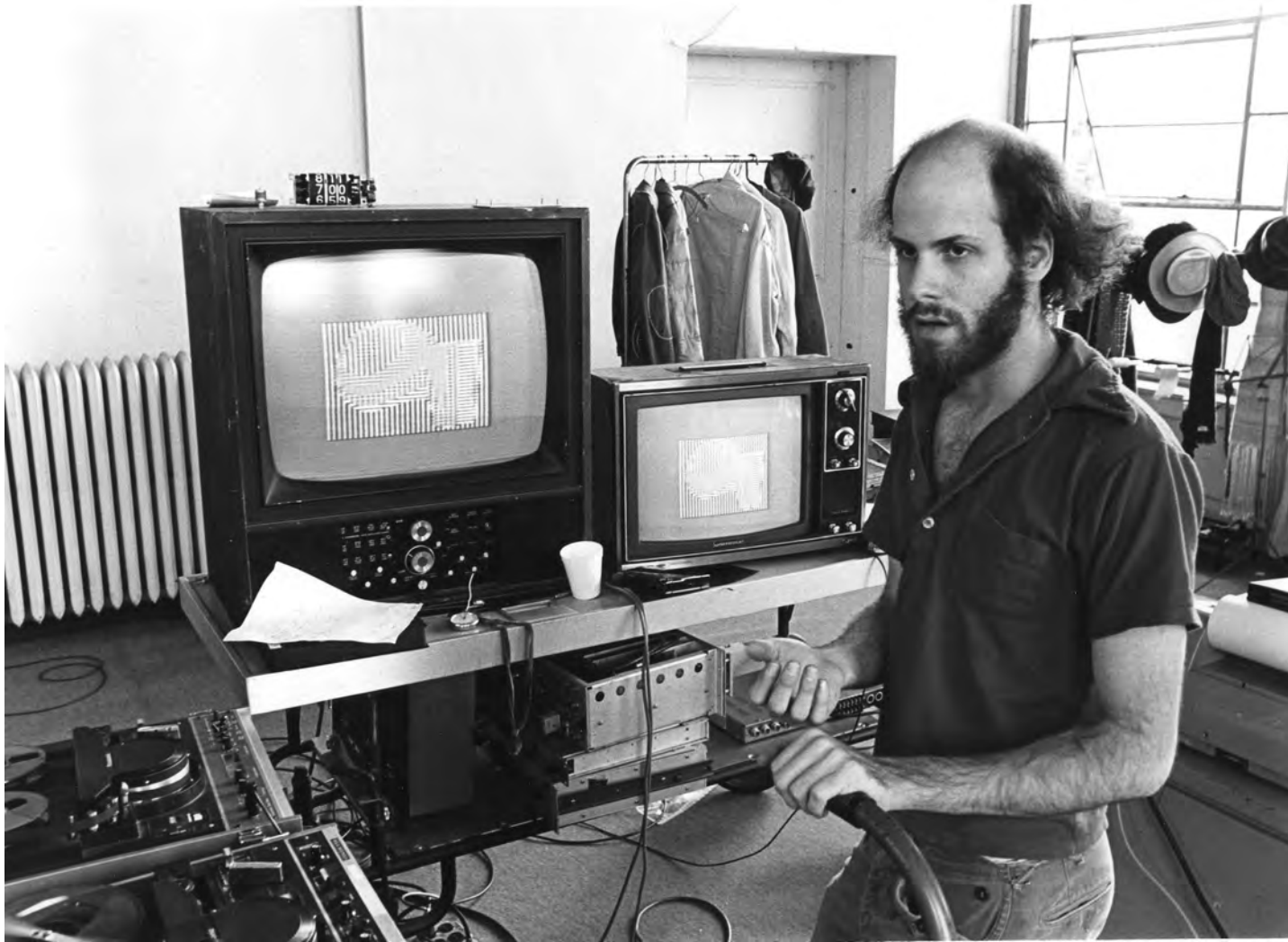
23 Nam June Paik coby video umělec na rezidenčním pobytu
v The Television Laboratory, WNET-13 (New York City, 1974)
Foto Carl Samrock

Nam June Paik as Video Artist-in-Residence at The Television
Laboratory, WNET-13 (New York City, 1974)
Photo by Carl Samrock



24 Steve Rutt
Pioneers, s. 137

Steve Rutt
Pioneers, p. 137



25 Jeffrey Schier v ateliéru-bytě Vasulkových (Buffalo, New York, 1978)
Foto Kevin Noble

Jeffrey Schier at Vasulka studio-loft (Buffalo, New York, 1978)
Photo by Kevin Noble



26 Eric Siegel
Pioneers, s. 117

Eric Siegel
Pioneers, p. 117